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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

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(21) Application number: **83038895**

(71) Applicant: **NEC CORP**

(22) Date of filing: **19.02.88**

(72) Inventor: **WATANABE MAKOTO**

(54) **NEGATIVE PRESSURE SLIDER**

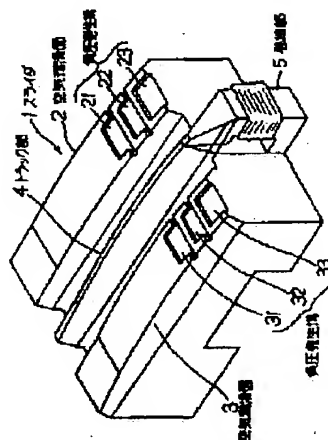
negative pressure force is not much changed and the stable flotation can be kept.

(57) Abstract:

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PURPOSE: To prevent occurring negative pressure from being much changed and to enable a head slider to keep stable flotation even when the position of the head slider is changed in some degree by providing independent plural negative pressure generation areas on the flotation surface of the slider along a relative movement direction for a recording medium.

CONSTITUTION: The independent negative pressure generation grooves 21W23 and 31W33 are respectively formed in a line state on either side to the back half of two sliders as the negative pressure generation area and all of them are made along the relative movement direction of the medium and the head slider 1. As the plural negative pressure generation grooves are formed on the slider flotation surface having a cylinder state curved surface in that way, suction force generated by the negative pressure of each groove is changed according to the attack angle of the slider and negative pressure suction force which generally occurs is scarcely changed even when the attack angle of the slider is changed. Thus, even when the position of the head slider is changed in some degree, the occurring



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(71) Applicant: **HITACHI LTD**

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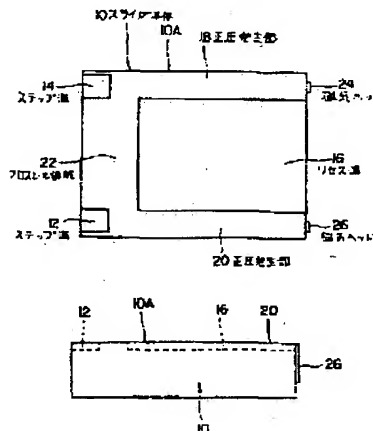
(54) **FLOATING HEAD SLIDER**

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(57) Abstract:

PURPOSE: To enhance a pressure reducing effect and to obtain a good floating characteristic according to a balance to a positive pressure by forming an auxiliary recess groove on a head slider.

CONSTITUTION: A pair of step grooves 12, 14 for introducing a fluid from the front end of a bottom face 10A are mutually separate and formed and the recess groove 16 for generating a negative buoyancy having a pressure lower than an atmospheric pressure is formed substantially on the center of the bottom face 10A of a back end side and positive pressure generating parts 18, 20 are formed on the bottom face 10A as a positive pressure generating area. Accordingly, the positive pressure generating parts 18, 20 on which step grooves 12, 14 are formed generate a positive buoyancy according to a step bearing operation and further generate a large negative buoyancy by a close rail area 22 and an opposite step form recess groove 16. Accordingly, the good floating characteristic can be obtained by the total sum of the positive pressure.



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PATENT ABSTRACTS OF JAPAN

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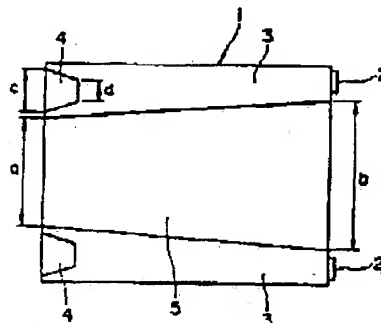
(54) FLOATING HEAD SLIDER

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(57) Abstract:

PURPOSE: To cause a floating characteristic to be satisfactory by forming a bleed part so as to be shallow and executing an air bearing action to generate a floating pressure at the time of activating to a step bearing part.

CONSTITUTION: Air bearing rails 3 composed of plane surfaces are arranged at both sides on the floating surface of a slider 1, a transducer 2 is fitted to the outflow edge of the air bearing rail 3, a step bearing groove 4 has walls at both sides, and it is made into a tapered shape in which a width (d) at the outflow side is made smaller than a width (c) at an inflow side. A width (a) at the inflow side of a bleed part 5 is made into the relation of $a < b$ to a width (b) at the outflow side, and a constitution to be successively changed is made. Thus, the air bearing rail 3 having the step bearing groove 4 forms a step shape bearing and generates the positive floating force by the viscosity of an air flow.



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(54) **FLOATING HEAD SLIDER**

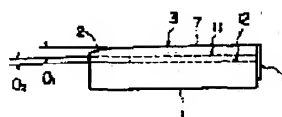
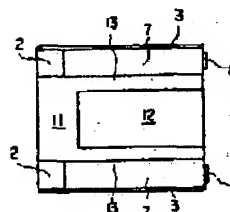
satisfactory mass productivity.

(57) Abstract:

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PURPOSE: To obtain a floating head slider, for which mass production is enabled, with a satisfactory floating property by providing a second recessed part to generate negative pressure in a bleed part formed to be more recessed than the floating surface of the slider.

CONSTITUTION: Between a pair of gas bearing rails 3 to be arranged on the both sides of the floating surface of a slider 1, a bleed part 11 is provided to be more recessed than the surfaces of the gas bearing rails 3 only for depth D_1 and in the area of the bleed part 11, a recessed part 12 is provided with depth D_2 to reach a flow-out end. For gas flowing into the bleed part 11, only a slight pressure change occurs until the second recessed part 12. When the gas reaches the second recessed part 12, the gas becomes a flow to spread in a height direction and the negative pressure is generated. However, since a shape change is reduced to the flow of the gas and the distortion of the gas is made small, as a result, dust is hardly stuck to this part. Thus, the floating head slider can be obtained with the satisfactory dynamic property of floating and the



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(11) Publication number: **60242548 A**

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G11B 21/21

(21) Application number: **60007522**

(22) Date of filing: **21.01.85**

(71) Applicant: **HITACHI LTD**

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(54) **FLOATING TYPE MAGNETIC HEAD**

(57) Abstract:

PURPOSE: To suppress a decrease in the extent of floatation even when the yaw angle of a slider increases by forming a bearing operation part at one or both side edge parts of the slider rail for the slider.

CONSTITUTION: The bearing operation part, e.g. step part 6 which is extremely shallow lengthwise is provided at side edge parts of the slider rail 4 for the slider 2 which gives a floating force over a magnetic recording medium. The step part 6 serves as an approach run for pressure rising to air flowing in in the flank direction of the slider 2 when the yaw angle θ of the slider 2 increases. Consequently, nearly the same pressure as that when the yaw angle is zero is generated and a decrease in the extent of floatation of the slider 2 is prevented.

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